

=> d his

(FILE 'HOME' ENTERED AT 17:56:35 ON 23 DEC 2005)

FILE 'CAPLUS' ENTERED AT 17:57:00 ON 23 DEC 2005

L1 1 S US6693187/PN  
SELECT L1 1 RN

L2 37905 S E1-E56

FILE 'REGISTRY' ENTERED AT 17:57:31 ON 23 DEC 2005

L3 1 S 411234-01-0/RN  
SET NOTICE 1 DISPLAY  
SET NOTICE LOGIN DISPLAY

FILE 'REGISTRY' ENTERED AT 17:57:54 ON 23 DEC 2005

L4 1 S 411234-02-1/RN  
SET NOTICE 1 DISPLAY  
SET NOTICE LOGIN DISPLAY

FILE 'REGISTRY' ENTERED AT 17:58:09 ON 23 DEC 2005

L5 1 S 411234-04-3/RN  
SET NOTICE 1 DISPLAY  
SET NOTICE LOGIN DISPLAY

FILE 'REGISTRY' ENTERED AT 17:58:24 ON 23 DEC 2005

L6 1 S 411234-26-9/RN  
SET NOTICE 1 DISPLAY  
SET NOTICE LOGIN DISPLAY

FILE 'CAPLUS' ENTERED AT 17:58:57 ON 23 DEC 2005

L7 2 S L6

FILE 'REGISTRY' ENTERED AT 18:01:45 ON 23 DEC 2005

SET NOTICE 1 DISPLAY  
SET NOTICE LOGIN DISPLAY

FILE 'REGISTRY' ENTERED AT 18:02:17 ON 23 DEC 2005

L8 1 S 411234-22-5/RN  
SET NOTICE 1 DISPLAY  
SET NOTICE LOGIN DISPLAY

FILE 'CAPLUS' ENTERED AT 18:02:53 ON 23 DEC 2005

L9 2 S L8

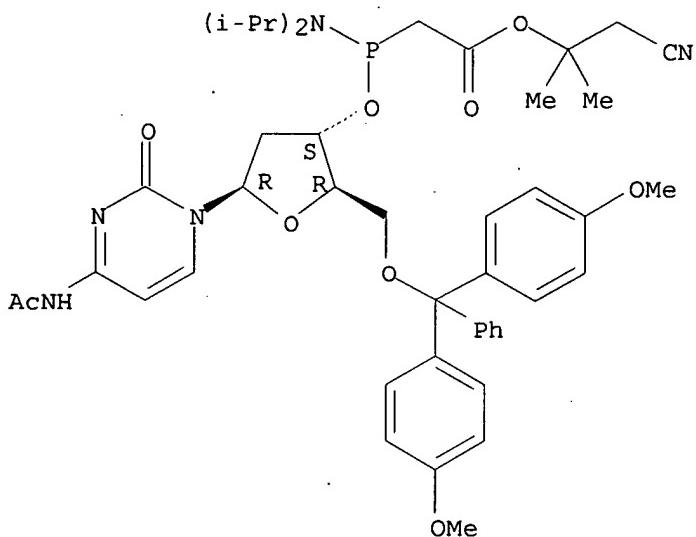
*checked Gary*

FILE 'USPATFULL, USPAT2' ENTERED AT 18:03:10 ON 23 DEC 2005

L10 2 S L6 OR L8

L8 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2005 ACS on STN  
RN 411234-22-5 REGISTRY  
CN Cytidine, N-acetyl-5'-[bis(4-methoxyphenyl)phenylmethyl]-2'-deoxy-,  
3'-(P-[2-(2-cyano-1,1-dimethylethoxy)-2-oxoethyl]-N,N-bis(1-  
methylethyl)phosphonamidite) (9CI) (CA INDEX NAME)  
FS STEREOSEARCH  
MF C45 H56 N5 O9 P  
SR CA  
LC STN Files: CA, CAPLUS, CASREACT, TOXCENTER, USPATFULL  
DT CA CAplus document type: Journal; Patent  
RL.P Roles from patents: PREP (Preparation); RACT (Reactant or reagent)  
RL.NP Roles from non-patents: PREP (Preparation); RACT (Reactant or reagent)

Absolute stereochemistry.



\*\*PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT\*\*

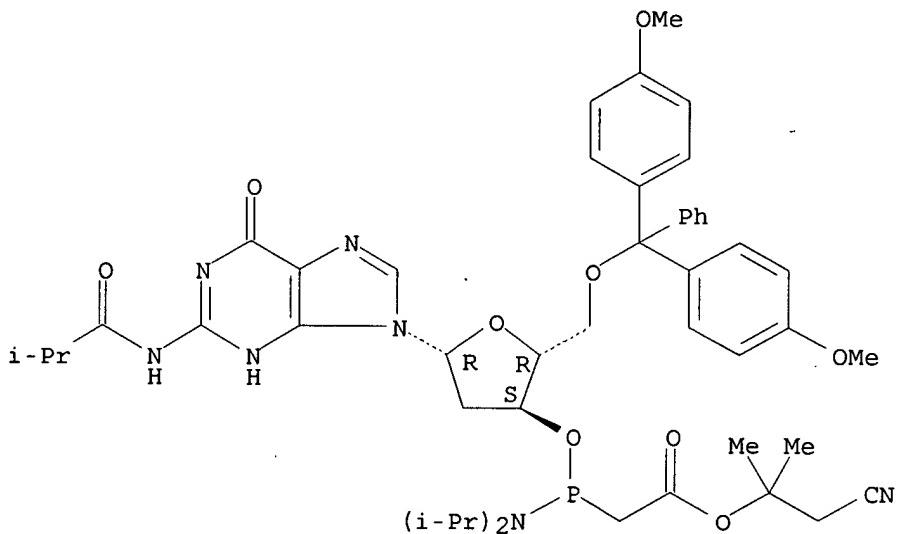
2 REFERENCES IN FILE CA (1907 TO DATE)  
2 REFERENCES IN FILE CAPLUS (1907 TO DATE)

=> D L6 SQIDE 1-

YOU HAVE REQUESTED DATA FROM 1 ANSWERS - CONTINUE? Y/(N):y  
THE ESTIMATED COST FOR THIS REQUEST IS 6.15 U.S. DOLLARS  
DO YOU WANT TO CONTINUE WITH THIS REQUEST? (Y)/N:y

L6 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2005 ACS on STN  
RN 411234-26-9 REGISTRY  
CN Guanosine, 5'-O-[bis(4-methoxyphenyl)phenylmethyl]-2'-deoxy-N-(2-methyl-1-oxopropyl)-, 3'-[P-[2-(2-cyano-1,1-dimethylethoxy)-2-oxoethyl]-N,N-bis(1-methylethyl)phosphonamidite] (9CI) (CA INDEX NAME)  
FS STEREOSEARCH  
MF C48 H60 N7 O9 P  
SR CA  
LC STN Files: CA, CAPIUS, CASREACT, TOXCENTER, USPATFULL  
DT.CA CAplus document type: Journal; Patent  
RL.P Roles from patents: PREP (Preparation); RACT (Reactant or reagent)  
RL.NP Roles from non-patents: PREP (Preparation); RACT (Reactant or reagent)

Absolute stereochemistry.



=> d ibib 1-2

L10 ANSWER 1 OF 2 USPATFULL on STN

ACCESSION NUMBER: 2004:152465 USPATFULL  
TITLE: Phosphinoamidite carboxylates and analogs thereof in  
the synthesis of oligonucleotides having reduced  
internucleotide charge  
INVENTOR(S): Dellinger, Douglas J., Sunnyvale, CA, UNITED STATES

|  | NUMBER   | KIND | DATE          |
|--|--|------|---------------|
| PATENT INFORMATION:                        | US 2004116687  | A1   | 20040617      |
| APPLICATION INFO.:                         | US 2003-721301   | A1   | 20031124 (10) |
| RELATED APPLN. INFO.:                      | Division of Ser. No. US 2000-691824, filed on 17 Oct<br>2000, GRANTED, Pat. No. US 6693187 |      |               |
| DOCUMENT TYPE:                             | Utility  |      |               |
| FILE SEGMENT:                              | APPLICATION  |      |               |
| LEGAL REPRESENTATIVE:                      | REED & EBERLE LLP, 800 MENLO AVENUE, SUITE 210, MENLO<br>PARK, CA, 94025                   |      |               |
| NUMBER OF CLAIMS:                          | 26   |      |               |
| EXEMPLARY CLAIM:                           | 1  |      |               |
| NUMBER OF DRAWINGS:                        | 9 Drawing Page(s)  |      |               |
| LINE COUNT:                                | 2660   |      |               |
| CAS INDEXING IS AVAILABLE FOR THIS PATENT. |  |      |               |

L10 ANSWER 2 OF 2 USPATFULL on STN

ACCESSION NUMBER: 2004:41483 USPATFULL  
TITLE: Phosphinoamidite carboxylates and analogs thereof in the  
synthesis of oligonucleotides having reduced  
internucleotide charge  
INVENTOR(S): Dellinger, Douglas J., Sunnyvale, CA, United States  
PATENT ASSIGNEE(S): Lievre Cornu LLC, Boulder, CO, United States (U.S.  
corporation)

|  | NUMBER   | KIND | DATE         |
|--|--|------|--------------|
| PATENT INFORMATION:                        | US 6693187   | B1   | 20040217     |
| APPLICATION INFO.:                         | US 2000-691824   |      | 20001017 (9) |
| DOCUMENT TYPE:                             | Utility  |      |              |
| FILE SEGMENT:                              | GRANTED  |      |              |
| PRIMARY EXAMINER:                          | Wilson, James O.                                       |      |              |
| ASSISTANT EXAMINER:                        | McIntosh, III, Traviss C.                              |      |              |
| LEGAL REPRESENTATIVE:                      | Reed & Eberle LLP, Reed, Dianne E., Eberle, Shelley P. |      |              |
| NUMBER OF CLAIMS:                          | 12   |      |              |
| EXEMPLARY CLAIM:                           | 1  |      |              |
| NUMBER OF DRAWINGS:                        | 9 Drawing Figure(s); 9 Drawing Page(s)                 |      |              |
| LINE COUNT:                                | 2603   |      |              |
| CAS INDEXING IS AVAILABLE FOR THIS PATENT. |  |      |              |

=> s 16  
L7 2 L6

=> d ibib 1-2

L7 ANSWER 1 OF 2 CAPLUS COPYRIGHT 2005 ACS on STN  
ACCESSION NUMBER: 2003:8309 CAPLUS  
DOCUMENT NUMBER: 138:205290  
TITLE: Solid-phase chemical synthesis of phosphonoacetate and thiophosphonoacetate oligodeoxynucleotides  
AUTHOR(S): Dellinger, Douglas J.; Sheehan, David M.; Christensen, Nanna K.; Lindberg, James G.; Caruthers, Marvin H.  
CORPORATE SOURCE: Department of Chemistry and Biochemistry, University of Colorado, Boulder, CO, 80309-0215, USA  
SOURCE: Journal of the American Chemical Society (2003), 125(4), 940-950  
PUBLISHER: American Chemical Society  
DOCUMENT TYPE: Journal  
LANGUAGE: English  
OTHER SOURCE(S): CASREACT 138:205290  
REFERENCE COUNT: 43 THERE ARE 43 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L7 ANSWER 2 OF 2 CAPLUS COPYRIGHT 2005 ACS on STN  
ACCESSION NUMBER: 2002:314950 CAPLUS  
DOCUMENT NUMBER: 136:325787  
TITLE: Preparation of oligodeoxyribonucleotide phosphinoamidite carboxylates and analogs having reduced internucleotide charge and enhanced nuclease resistance  
INVENTOR(S): Dellinger, Douglas J.  
PATENT ASSIGNEE(S): USA  
SOURCE: PCT Int. Appl., 104 pp.  
CODEN: PIXXD2  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

| PATENT NO.   | KIND   | DATE       | APPLICATION NO. | DATE       |
|--|--------|------------|-----------------|------------|
| WO 2002032912  | A2     | 20020425   | WO 2001-US32465 | 20011016   |
| WO 2002032912  | A3     | 20030313   |                 |            |
| W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,<br>CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,<br>GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,<br>LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT,<br>RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US,<br>UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM<br>RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,<br>DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF,<br>BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG |        |            |                 |            |
| US 6693187   | B1     | 20040217   | US 2000-691824  | 20001017   |
| EP 1334111   | A2     | 20030813   | EP 2001-983160  | 20011016   |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,<br>IE, SI, LT, LV, FI, RO, MK, CY, AL, TR   |        |            |                 |            |
| US 2004116687  | A1     | 20040617   | US 2003-721301  | 20031124   |
| PRIORITY APPLN. INFO.:   |        |            | US 2000-691824  | A 20001017 |
|  |        |            | WO 2001-US32465 | W 20011016 |
| OTHER SOURCE(S):   | MARPAT | 136:325787 |                 |            |

## EAST Search History

| Ref # | Hits    | Search Query   | DBs   | Default Operator | Plurals | Time Stamp       |
|-------|---------|--|---|------------------|---------|------------------|
|       |         | (phosph?nocarbox\$ phosph?noacet\$ phosph?noform\$) and \$nucleo?ide | US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB | OR               | ON      | 2002/10/17 15:52 |
| L1    | 24      | 536/22.1.ccls.   | US-PGPUB                                    | OR               | ON      | 2005/12/23 13:18 |
| L2    | 1021469 | "6"  | US-PGPUB                                    | OR               | ON      | 2005/12/23 13:18 |
| L3    | 109     | 536/26.1.ccls.   | US-PGPUB                                    | OR               | ON      | 2005/12/23 13:19 |
| L4    | 54      | 536/27.1.ccls.   | US-PGPUB                                    | OR               | ON      | 2005/12/23 13:19 |
| L5    | 54      | 536/28.1.ccls.   | US-PGPUB                                    | OR               | ON      | 2005/12/23 13:19 |
| L6    | 205     | 1 3 4 5  | US-PGPUB                                    | OR               | ON      | 2005/12/23 13:19 |
| S1    | 1       | phosphinoamid\$ and internucleotide                                  | US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB | OR               | ON      | 2005/12/22 17:43 |
| S2    | 2       | phosphinoamid\$ and \$nucleo?ide                                     | US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB | OR               | ON      | 2002/10/17 13:42 |
| S3    | 0       | phosphonioacetic and (nucleo?ide)                                    | US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB | OR               | ON      | 2002/10/17 13:43 |
| S4    | 117     | phosphonoacetic and (nucleo?ide)                                     | US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB | OR               | ON      | 2002/10/17 13:43 |
| S5    | 12      | (phosphonoacetic and (nucleo?ide)) and cyano                         | US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB | OR               | ON      | 2002/10/17 15:47 |
| S6    | 50      | phosph?nocarboxylate   | US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB | OR               | ON      | 2002/10/17 15:48 |

## EAST Search History

|     |      |  |   |    |    |                  |
|-----|------|--|---|----|----|------------------|
| S7  | 1370 | phosph?nocarbox\$  | US-PGPUB;<br>USPAT;<br>EPO; JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2002/10/17 15:48 |
| S8  | 1550 | phosph?noacet\$  | US-PGPUB;<br>USPAT;<br>EPO; JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2002/10/17 15:48 |
| S9  | 666  | phosph?noform\$  | US-PGPUB;<br>USPAT;<br>EPO; JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2002/10/17 15:48 |
| S10 | 3395 | phosph?nocarbox\$<br>phosph?noacet\$ phosph?noform\$   | US-PGPUB;<br>USPAT;<br>EPO; JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2002/10/17 15:48 |
| S11 | 10   | (phosph?nocarbox\$<br>phosph?noacet\$ phosph?noform\$)<br>and internucleu?ide  | US-PGPUB;<br>USPAT;<br>EPO; JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2002/10/17 15:49 |
| S12 | 3    | (phosph?nocarbox\$<br>phosph?noacet\$ phosph?noform\$)<br>and internucleo?ide  | US-PGPUB;<br>USPAT;<br>EPO; JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2002/10/17 15:51 |
| S13 | 593  | (phosph?nocarbox\$<br>phosph?noacet\$ phosph?noform\$)<br>and nucleo?ide   | US-PGPUB;<br>USPAT;<br>EPO; JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2002/10/17 15:51 |
| S14 | 579  | ((phosph?nocarbox\$<br>phosph?noacet\$ phosph?noform\$)<br>and \$nucleo?ide) and synthesis                               | US-PGPUB;<br>USPAT;<br>EPO; JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2002/10/17 15:52 |
| S15 | 196  | ((((phosph?nocarbox\$<br>phosph?noacet\$ phosph?noform\$)<br>and \$nucleo?ide) and synthesis)<br>and support             | US-PGPUB;<br>USPAT;<br>EPO; JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2002/10/17 15:53 |
| S16 | 67   | (((phosph?nocarbox\$<br>phosph?noacet\$ phosph?noform\$)<br>and \$nucleo?ide) and synthesis)<br>and support) and linkage | US-PGPUB;<br>USPAT;<br>EPO; JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2002/10/17 15:53 |

## EAST Search History

|     |      |   |   |    |    |                  |
|-----|------|---|---|----|----|------------------|
| S17 | 5173 | oligonucleotide adj synthesis   | US-PGPUB;<br>USPAT;<br>EPO; JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2002/10/22 11:56 |
| S18 | 454  | (oligonucleotide adj synthesis)<br>same deprotect\$   | US-PGPUB;<br>USPAT;<br>EPO; JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2002/10/22 11:56 |
| S19 | 118  | ((oligonucleotide adj synthesis)<br>same deprotect\$) same hydroxyl   | US-PGPUB;<br>USPAT;<br>EPO; JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2002/10/22 11:56 |
| S20 | 4    | ((oligonucleotide adj synthesis)<br>same deprotect\$) same hydroxyl)<br>same phosphitylat\$   | US-PGPUB;<br>USPAT;<br>EPO; JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2002/10/22 12:01 |
| S21 | 49   | (((oligonucleotide adj synthesis)<br>same deprotect\$) same hydroxyl)<br>same coupl\$   | US-PGPUB;<br>USPAT;<br>EPO; JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2002/10/22 12:03 |
| S22 | 47   | (((oligonucleotide adj synthesis)<br>same deprotect\$) same hydroxyl)<br>same coupl\$) and monomer  | US-PGPUB;<br>USPAT;<br>EPO; JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2002/10/22 12:03 |
| S23 | 28   | (((oligonucleotide adj synthesis)<br>same deprotect\$) same hydroxyl)<br>same coupl\$) and monomer) and<br>oxidiz\$   | US-PGPUB;<br>USPAT;<br>EPO; JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2002/10/22 12:03 |
| S24 | 40   | ((((oligonucleotide adj synthesis)<br>same deprotect\$) same hydroxyl)<br>same coupl\$) and monomer) and<br>oxidation   | US-PGPUB;<br>USPAT;<br>EPO; JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2002/10/22 12:03 |
| S25 | 40   | ((((oligonucleotide adj synthesis)<br>same deprotect\$) same hydroxyl)<br>same coupl\$) and monomer) and<br>oxidation) (((((oligonucleotide adj<br>synthesis) same deprotect\$) same<br>hydroxyl) same coupl\$) and<br>monomer) and oxidiz\$) | US-PGPUB;<br>USPAT;<br>EPO; JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2002/10/22 14:24 |

## EAST Search History

|     |      |                          |   |    |    |                  |
|-----|------|--------------------------|---|----|----|------------------|
| S26 | 2    | "4517338".pn.            | US-PGPUB;<br>USPAT;<br>EPO; JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2002/10/22 14:24 |
| S27 | 2    | "6693187".pn.            | US-PGPUB;<br>USPAT;<br>EPO; JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2004/09/02 22:12 |
| S28 | 2    | "4056673".pn.            | US-PGPUB;<br>USPAT;<br>EPO; JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2004/09/02 22:12 |
| S29 | 4    | "4415732".pn.            | US-PGPUB;<br>USPAT;<br>EPO; JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2004/09/02 22:12 |
| S30 | 2    | "4725677".pn.            | US-PGPUB;<br>USPAT;<br>EPO; JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2004/09/02 22:12 |
| S31 | 2    | "5763208".pn.            | US-PGPUB;<br>USPAT;<br>EPO; JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2004/09/02 22:12 |
| S32 | 2    | "6069243".pn.            | US-PGPUB;<br>USPAT;<br>EPO; JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2004/09/02 22:12 |
| S33 | 12   | S28 S29 S30 S31 S32      | US-PGPUB;<br>USPAT;<br>EPO; JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2004/09/02 23:10 |
| S34 | 464  | nucleobase.clm.          | USPAT   | OR | ON | 2004/09/02 23:11 |
| S35 | 34   | S34 same analog          | USPAT   | OR | ON | 2004/09/02 23:41 |
| S36 | 1141 | 536/25.3.ccls.           | USPAT   | OR | ON | 2004/09/02 23:45 |
| S37 | 1450 | 536/22.1.ccls.           | USPAT   | OR | ON | 2004/09/02 23:45 |
| S38 | 125  | 536/26.1.ccls.           | USPAT   | OR | ON | 2004/09/02 23:45 |
| S39 | 1545 | S37 S38                  | USPAT   | OR | ON | 2004/09/02 23:45 |
| S40 | 4    | S39 and phosph?noamidite | USPAT   | OR | ON | 2004/09/02 23:46 |

## EAST Search History

|     |   |               |   |    |    |                  |
|-----|---|---------------|---|----|----|------------------|
| S41 | 2 | "6693187".pn. | US-PGPUB;<br>USPAT;<br>EPO; JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2005/12/23 13:18 |
|-----|---|---------------|---|----|----|------------------|